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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,827	02/18/2004	Thomas Rezachek	H0004291	3746
<div>Kris Fredrick Honeywell International Inc. 101 Columbia Road - Patent Department Morristown, NJ 07962-2245</div>				
			<div>EXAMINER CREPEAU, JONATHAN</div>	
			<div>ART UNIT 1745</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 05/16/2007</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/780,827

**Applicant(s)**

REZACHEK ET AL.

**Examiner**

Jonathan S. Crepeau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10-11-05 2-18-04.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I in the reply filed on February 28, 2007 is acknowledged. It is noted that in the remarks, Applicants state that claims 53 and 54 are cancelled, although they are presented with "(Original)" status identifiers in the claim listing. For examination purposes herein, the claims will be treated as cancelled.

### ***Information Disclosure Statement***

2. Reference AQ on the IDS filed on 2/18/04 has not been considered because a publication date cannot be ascertained. If at least a year can be provided the document will be made of record.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 6, 8, 10, 11, 24, 25, 28, 31, 34, 36, 43, 47, 48, and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Bailey, Jr. et al (U.S. Patent 4,261,955). Regarding claims 1 and 2, the reference teaches an electrical power generator comprising a water vapor generator

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(28) and a hydrogen gas generator (12) attached to the water vapor generator via conduits (22) (see Fig. 2). A fuel cell is attached to the hydrogen gas generator via a conduit (26) (see Fig. 2, col. 2, line 5). Regarding claim 1, the hydrogen gas generator contains a substantially non-fluid metal hydride material (see col. 1, line 55). Regarding claim 6, the water vapor generator comprises a chamber which is filled with liquid water (28) and has water vapor above it (see Fig. 2). Regarding claim 6, the metal hydride reacts with water vapor to produce hydrogen (see col. 2, line 9). Regarding claim 10, hydrogen is "initially loaded" into the outlet conduits (26) as needed (see col. 2, line 11). Regarding claim 11, a manifold (34) is present so as to direct more water into the water vapor generator and provide an "initial flow" of water vapor (see Fig. 1; col. 2, line 7). Regarding claim 24, porous membranes (i.e., plugs) (20) impede the flow of liquid from the water vapor generator but allow passage of hydrogen gas and water vapor therethrough (see Fig. 2). Regarding claim 25, the hydride fuel is present in "pellet" or "granule" form (see Fig. 2). Regarding claim 28, the water vapor generator comprises a tensile membrane (24) which pumps water vapor (see Fig. 2).

Thus, the instant claims are anticipated.

5. Claims 1, 4, 6, 8, 10, 11, 12, 15, 25, 28, 31, 34, 36, 39, 42, 43, 47, 48, 49 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Taschek (U.S. Patent 4,155,712).

Regarding claim 1, the reference teaches an electrical power generator comprising a water vapor generator (3) and a hydrogen gas generator (2) attached to the water vapor generator (see Fig. 1).

A fuel cell is attached to the hydrogen gas generator via a conduit (9) (see Fig. 1; col. 4, line 40). Regarding claims 1 and 8, the hydrogen gas generator contains a substantially non-fluid metal hydride material such as lithium aluminum hydride (see col. 3, line 65 et seq.). Regarding claim 6, the water vapor generator comprises a chamber which is filled with liquid water (7) and has water vapor above it (see Fig. 1). Regarding claim 6, the metal hydride reacts with water vapor to produce hydrogen (see col. 4, line 4). Regarding claim 10, hydrogen is "initially loaded" in the hydrogen gas generator as needed (see col. 4, line 45 et seq.). Regarding claim 11, a water tank (7) is present so as to direct more water into the water vapor generator and provide an "initial flow" of water vapor (see Fig. 1). Regarding claim 25, the hydride fuel is present in "pellet" or "granule" form (see Fig. 1). Regarding claim 28, water vapor generator comprises a tensile membrane (4) which pumps water vapor (see Fig. 1).

Thus, the instant claims are anticipated.

6. Claims 1-4, 6, 8, 12-15, 18-23, 25, 31, 33-45, and 49-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Kerrebrock et al (U.S. Patent 5,372,617). The reference teaches an electrical power generator comprising and a fuel cell attached to a hydrogen gas generator (22) via a conduit containing a valve (72) (see Fig. 4). The hydrogen gas generator contains a substantially non-fluid metal hydride material in a pelletized or granular form (see col. 5, line 30). The material may comprise lithium borohydride, sodium borohydride, or lithium aluminum hydride (see Table 1). The system further comprises a water reservoir (64) that

supplies water to the hydrogen generator via a pump (66) and a valve (68). In column 7, line 42, the reference teaches that a heater may be provided in the water feed line to generate steam for injection into the hydrogen generator. A return line from the fuel cell leads to the water reservoir (see Fig. 4). The valve can be being controlled by hydrogen gas pressure within the system, as measured by a sensor (74) (see Fig. 4). Regarding the recitations of “mesopump” and “mesovalve,” the pump and valve of Kerrebrock are considered to read on these limitations in the absence of a clear definition of these terms.

Thus, the instant claims are anticipated.

7. Claims 1-4, 6, 8, 18, 19, 31, 33-36, 43-45, and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Werth (U.S. Patent 6,093,501). The reference teaches an electrical power generator comprising and a fuel cell attached to a hydrogen gas generator (15) via a conduit containing a pump (19) (see Fig. 2). The hydrogen gas generator contains a substantially non-fluid iron material. The system further comprises a water reservoir (18) that supplies water to the hydrogen generator via a pump (16). A heater (17) is provided in the water feed line to generate steam for the hydrogen generator (see col. 3, line 29). A return line from the fuel cell leads to the water reservoir (see Fig. 2).

Thus, the instant claims are anticipated.

*Claim Rejections - 35 USC § 103*

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5, 9, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Bailey, Taschek, or Kerrebrock in view of WO 01/85606.

Bailey, Taschek, and Kerrebrock are applied for the reasons stated above. However, none of the references teaches that a mixture of alcohol and water is used to generate hydrogen as recited in claims 5, 9, and 32.

WO '606 is directed to a method of hydrogen generation comprising reacting a metal hydride with at least one alcohol in the presence of water (see abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of WO '606 to add an alcohol to the reactant water supply of Bailey, Taschek, or Kerrebrock. In the abstract, WO '606 teaches that the use of an alcohol "provide s a convenient, efficient method of generating hydrogen for a fuel cell." Accordingly, the artisan would be motivated by the disclosure of WO '606 to add an alcohol to the reactant water supply of Bailey, Taschek, or Kerrebrock.

It is further noted that instant claims 5, 9, and 32 are not believed to be supported in the manner required by 35 USC 112, first paragraph by the parent application Serial No. 09/941,247,

nor provisional application Serial No. 60/448,573, and are therefore accorded a filing date of 2/18/04. As such, the WO '606 reference qualifies as prior art under 35 USC 102(b) against these claims.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over any of Bailey, Taschek, or Kerrebrock in view of Hoffman et al (U.S. Patent 4,055,632).

Bailey, Taschek, and Kerrebrock are applied for the reasons stated above. However, none of the references teaches that the hydrogen generator further comprises a hydrogen generation catalyst, as recited in claim 16.

Hoffman et al. is directed to a hydrogen gas generator. In column 2, line 67 et seq., the reference teaches that the generator comprises a metallic hydride such as sodium borohydride and a catalyst such as cobalt chloride.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Hoffman et al. to use sodium borohydride and cobalt chloride in the hydrogen generators of Bailey, Taschek, or Kerrebrock. In the cited passage, Hoffman et al. state that these materials are "preferred." Thus, the artisan would have sufficient motivation to use these materials in the hydrogen generators of Bailey, Taschek, or Kerrebrock. Accordingly, the subject matter of claim 16 would be rendered obvious to the skilled artisan.



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11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over any of Bailey, Taschek, or Kerrebrock in view of Hoffman et al as applied to claim 16 above, and further in view of Suda (U.S. Patent 6,358,488).

Hoffman et al. do not expressly teach that the catalyst is cobalt, nickel, or ruthenium, as recited in claim 17.

Suda is directed to a method of generation of hydrogen gas involving metal hydrides and water. In column 4, line 24, the reference teaches that cobalt and nickel can be used as catalysts in the reaction.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Suda to use cobalt or nickel as the catalyst of the modified system of Bailey, Taschek, or Kerrebrock. In column 4, line 17, Suda teaches that "it is essential in the inventive method that the reaction is promoted catalytically by a catalyst material brought into contact with the reaction medium." Accordingly, the artisan would be motivated to use cobalt or nickel as the catalyst of Hoffman, thereby rendering the subject matter of claim 17 obvious.

12. Claims 26, 27, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey, Jr. et al. in view of Lehmeier et al (U.S. Patent 5,942,344).

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Bailey, Jr. et al. is applied for the reasons stated above. However, the reference does not expressly teach that the fuel cell is heated with a heater, as recited in claim 26, or that the fuel cell is at least partially surrounded by insulation, as recited in claim 27.

Lehmeier et al. is directed to a high-temperature fuel cell surrounded by a heating element (12, 14) and insulation (9) (see the Figure; col. 3, line 49).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the fuel cell of Lehmeier et al. and its associated heater and insulation in the system of Bailey, Jr. et al. In column 2, line 14, Lehmeier et al. teaches the following:

**It is accordingly an object of the invention to provide a high-temperature fuel cell system and a method for its operation, which overcome the hereinafore-mentioned disadvantages of the heretofore-known devices and methods of this general type and in which the high-temperature fuel cells are not polluted or damaged during heating.**

Accordingly, the artisan would be motivated to use the fuel cell and associated components of Lehmeier et al. in the system of Bailey, Jr. et al in hopes not polluting or damaging the fuel cell during heating.

13. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taschek.

The reference is applied for the reasons stated above. However, the reference does not expressly teach that the water vapor generator, hydrogen generator, fuel cell, and conduits are formed within a polymeric block, as recited in claim 29.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use such a structure based on the disclosure of Taschek. In column 7, line 34, the reference teaches that “[t]he entire apparatus of FIG. 3 can be fabricated as a small package to form a small light weight portable DC power supply.” Accordingly, the artisan would be motivated to incorporate each of the elements of Fig. 3 into an integral package. Further, the use of a polymer, as well as the specific polymers recited in claim 30 would be obvious to the skilled artisan. For example, polycarbonate is a well-known material and provides advantages such as strength, toughness, and lightweightness. As such, the recitation of a polymeric material and the particular species of polymers are not considered to distinguish over the reference.

### ***Double Patenting***

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re*

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*Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 31 and 33-52 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 7,001,681. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '681 patent anticipate the instant claims.

16. Claim 32 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 7,001,681 in view of WO 01/85606. WO '606 is applied for the reasons set forth in the rejection above, therefore rendering obvious the subject matter of claim 32.

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17. Claims 1-4, 6-8, and 10-30 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6, 9-15, 18-21, and 36-40 of copending Application No. 11/247,435. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '435 application anticipate the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

18. Claims 5 and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6, 9-15, 18-21, and 36-40 of copending Application No. 11/247,435 in view of WO 01/85606. WO '606 is applied for the reasons set forth in the rejection above, therefore rendering obvious the subject matter of claims 5 and 9.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

19. Claims 1-4, 6-8, 10-31 and 33-52 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-28 of copending Application No. 10/907294. Although the conflicting claims are not identical, they are not

patentably distinct from each other because the '294 application claims anticipate the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

20. Claims 5, 9, and 32 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-28 of copending Application No. 10/907294 in view of WO 01/85606. WO '606 is applied for the reasons set forth in the rejection above, therefore rendering obvious the subject matter of claims 5, 9, and 32.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

#### ***Allowable Subject Matter***

21. Claim 7 contains allowable subject matter as currently drafted but is subject to double patenting rejections as set forth above.

22. The following is a statement of reasons for the indication of allowable subject matter:

The reasons for allowance of claim 7 were set forth in Application serial no. 09/941,247 and remain applicable.

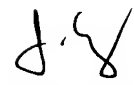
*Conclusion*

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299.

The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jonathan Crepeau  
Primary Examiner  
Art Unit 1745  
May 11, 2007